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(follows page)

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APPENDICES

VOLUNTARY CLEANUP AND REDEVELOPMENT ACT APPLICATION

July 11, 1994 Draft

This application form is prepared by the Colorado Department of Public Health and Environment, to assist potential applicants in meeting the requirements outlined in the Voluntary Cleanup and Redevelopment Act (HB94-1299). Adherence to this application will insure that adequate information is submitted to allow the Department to evaluate the application and make a determination on the Voluntary Cleanup Plan or No Action Petition. All applications must include a filing fee of $2000. Department review time will be billed against this fee, with any remaining funds to be returned to the applicant.

GENERAL INFORMATION

The applicant should begin by providing the following general information:

Page		
1-2	1)	Name and address of owner
1-2	2)	Contact person and phone number
1-1	3)	Location of property
1-3	4)	The type and source of contamination
1-3	5)	If contamination will remain on property following implementation of your proposal, provide Global positioning system coordinates
1-3	6)	State whether request is for approval of Voluntary Cleanup Plan (VCUP) or a petition of No Further Action Determination (NAD)
1-3	7)	Current Land Use
1-4	8)	Proposed Land Use

PROGRAM INCLUSION

This section is designed to determine whether the applicant meets the criteria for eligibility under the Act. Please answer yes (Y), no (N), or not sure (NS) to the questions below. If the answer to any of the questions is not sure (NS) please fill out the appropriate checklist questionnaire in Appendix 1 (these have not yet been developed at the time of the last draft). An answer "no" to question 1 or "yes" to questions 2-6 will result in a determination that the application is not eligible for the Voluntary Cleanup Program. The submission of misleading information will render any approval given by the Department void.

Page		
1-4 Yes	1)	Is the applicant the owner of the property for the submitted VCUP or NAD? IF yes, verify ownership.
1-4 No	2)	Is the property submitted for the VCUP or NAD listed or proposed for listing on the National Priorities List of Superfund sites established under the federal act (CERCLA)
1-4 No	3)	Is the property submitted for which the VCUP or NAD the subject of corrective action under orders or agreements issued pursuant to the provisions of Part 3 of Article 15 of this Title or the federal "Resources Conservation and Recovery Action of 1976", as amended? If yes, please list order number.

1-4 4) Is the property submitted for the VCUP or NAD subject to an order issued by or an agreement No (including permits) with the Water Quality Control Division pursuant to Part 6 of Article 8 of this Title? If yes, please list order or permit number.

1-4 5) Is the property submitted for the VCUP or NAD a facility which has or should have a permit or No interim status pursuant to Part 3 of Article 15 of this Title (RCRA Subtitle C) for treatment, storage, or disposal of hazardous waste? IF yes, please list permit number.

NOTE: Properties that do not have a permit or interim status but at which hazardous waste, as defined in the Colorado Hazardous Waste Act and implementing regulations, was treated, stored, or disposed of at any time after 1980 is considered by the Department to have required a permit or interim status. Disposal is defined as any discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment.

1-5 6) Is the property submitted for the VCUP or NAD subject to the provisions of Part 5 of Article 20 of
No Title 8 (Underground Storage Tank - State Oil Inspector), C.R.S. or of Article 18 of this Title (RCRA subtitle I).

VOLUNTARY CLEANUP APPLICATION

Any plan for voluntary cleanup (VCUP) or request for no action determination (NAD) must include the following information to be considered complete. Applicants need to supply enough information in sufficient detail for the Department to make a determination. If certain information is not applicable to the site, the applicant may provide evidence and explanations as to why specifically requested information is not applicable. It is most important that the applicant describe the rationale used in performing the site investigation (including selection of sampling locations and parameters), performing risk assessments, selecting cleanup levels, and any other decision making process included in the application.

The applicant should include a cross reference listing the page number(s) of the application which correspond to the following listed information requirements on the blank line to the left of the information description on this form (or by other equivalent means).

ENVIRONMENTAL ASSESSMENT

Page

2-1 1) Environmental assessments must be submitted by qualified professionals, who are defined as persons having education, training, and experience in preparing environmental studies and assessments. The applicant should submit documentation, in the form of a statement of qualifications or resume, that the environmental assessment has been prepared by a qualified environmental professional.

1-2 2) The applicant should provide the address (if applicable) and legal description of the site, and a map of appropriate scale identifying the location and size of the property.

2-2 3) The applicant should describe the operational history of the property in detail, including the most current use for the property. This description should include, but not be limited to:

2-2 (i) a description of all business/activities that occupy or occupied the site as far back as records/knowledge allows;

2-2 (ii) a brief description of all operations which may have resulted in the release of hazardous substances or petroleum products at the site both past and present, including the dates activities occurred at the property, and dates during which contaminants were released into the environment;

2-4 (iii) a list of all:

(a) site specific notifications made as a result of any management activities of hazardous substances conducted at the site, including any and all EPA ID numbers obtained for management of hazardous substances at the site from either the State or the U.S. Environmental Protection Agency (EPA):

2-4 (b) notification to county emergency response personnel for the storage of reportable quantities of hazardous substances required under Emergency Planning and Community Right to Know statutes; and

2-4 (c) - notifications made to State and/or Federal agencies as a reporting spills and/or accidental releases, including notifications to the State Oil Inspection Section required under 8-20-506 and 507 and 25-18-104 C.R.S. 1989 as amended, and 6 C.C.R.1007-5 Subpart 28.50. Part 3 of the OIS regulations etc.;

2-4 (iv) a list of all known hazardous substances used at the site, with volume estimates;

2-5 (v) a list of all wastes generated by current activities conducted at the site, and manifests for shipment of hazardous wastes off-site;

2-5 (vi) a list of all permits obtained from State or Federal agencies required as a result of the activities conducted at the site; and

2-4 (vii) a brief description of the current land uses, zoning and zoning restrictions of all areas contiguous to the site.

2-6 4) The applicant shall describe the physical characteristics of the site, including a map to scale (or separate maps, whichever represent the following types of information most clearly), and an accompanying narrative showing and describing the following (where applicable):

2-6 (i) topography;
2-7 (ii) all surface water bodies and wastewater discharge points;
2-7 & 2-11 (iii) ground water monitoring & supply wells;
2-15 (iv) facility process units and loading docks;
2-15 (v) chemical and/or fuel transfer, and pumping stations;
2-15 (vi) railroad tracks and rail car loading areas;
2-15 (vii) spill collection sumps and/or drainage collection areas;
2-15 (viii) wastewater treatment units;
2-14 (ix) surface and storm water run-off retention ponds and discharge points;
2-15 (x) building drainage or wastewater discharge points;
2-15 (xi) all above or below ground storage tanks;
2-15 (xii) underground or above ground piping;

2-15 (xiii) air emission control scrubber or refrigeration units;
2-15 (xiv) water cooling systems or refrigeration units;
2-15 (xv) sewer lines;
2-15 (xvi) french drain systems;
2-15 (xvii) water recovery sumps and building foundations;
2-12 (xviii) surface impoundments;
2-12 (xix) waste storage and/or disposal areas/pits, landfills etc.;
2-15 (xx) chemical or product storage areas;
2-15 (xxi) leach fields; and
2-15 (xxii) dry wells or waste disposal sumps.

2-7 5) If groundwater contamination exists, or if the release has the potential to impact groundwater, the applicant should provide the following information for areas within one-half mile radius of the site:

2-8 Figure 2-3 (i) the State Engineer's Office listing of all wells within the one-half mile radius of the site, together with a map to scale showing the locations of these wells;

2-8 (ii) documentation of due diligence in verifying the presence or absence of unregistered wells supplying ground water for domestic use in older residential neighborhoods, or in rural areas;

Not Applicable (iii) a statement about each well within the half-mile radius of the site, stating whether the well is used as a water-supply well, or a ground water monitoring well;

Not Applicable (iv) lithologic logs for all on-site wells;

Not Applicable (v) well construction diagrams for all on-site wells, showing screened interval, casing type and construction details (obtainable from the State Engineer's Office), including: gravel pack interval, bentonite seal thickness and cemented interval;

2-8 (vi) a description of the current and proposed uses of on-site groundwater in sufficient detail to evaluate human health and environmental risk pathways. In addition, the applicant will provide a discussion of any State and/or local laws that would restrict the use of on-site ground water.

2-15 6) The applicant should provide information concerning the nature and extent of any contamination and releases of hazardous substances or petroleum products which have occurred at the site, including by not limited to:

2-15 (i) identification of the nature and extent, both on-site and off-site, of contamination that has been released into soil, ground water and surface water at the property, and/or releases of substances from each of the areas identified in Section 25-16-308(b) above;

2-15 (ii) a determination of whether or not, those substances identified in paragraph (i) above, contain hazardous substances either through process knowledge, Material Safety Data Sheet information provided by a manufacturer, or through chemical analysis;

2-12&2-15 (iii) a statement defining the chemical nature, mobility and toxicity of the substances identified in paragraph (i) above, estimated volumes and concentrations of substances discharged at each area, discharge point, drain, or leakage point;

Not Available (iv) a map to scale showing the depth to ground water across the site;

Not Available (v) a map to scale showing the direction and rate of ground water movement across the site using a minimum of three (3) measuring points;

None (vi) a discussion of all hydraulic tests performed at the site to characterize the hydrogeologic properties of any aquifers on-site and in the area;

2-15&2-16 (vii) all reports and/or correspondence which detail site soil, ground water and/or surface water conditions at the site, including original analytical laboratory reports for all samples and analyses;

Separate Reports Provided (viii) a discussion of how all environmental samples were collected, including rationale involved in sampling locations, parameters, and methodology, a description of sampling locations, sampling methodology and analytical methodology, and information on well construction details and lithologic logs. All sample analyses performed and presented as part of the environmental assessment should be appropriate and sufficient to fully characterize all constituents of all contamination which may have impacted soil, air, surface water and/or ground water on the property. The applicant should use EPA approved analytical methods when characterizing the soil, air, surface water and/or ground water.

APPLICABLE STANDARDS/RISK DETERMINATION

3-1 1) The applicant should provide a description of applicable promulgated state standards establishing acceptable concentrations of constituents (present at the site) in soils, surface water, or ground water.

3-1 2) The applicant should provide a description of the human and environmental exposure to contamination at the site based on the property's current use and any future use proposed by the property owner. This description shall include, but not be limited to the following:

2-15 (i) a table or list, for site contaminants indicating:

Not Applicable (a) whether they are known to be carcinogenic (together with any relevant toxicity information for each carcinogenic contaminant available, including the slope factor for the contaminant) or whether they are non-carcinogenic (together with any relevant toxicity information on each contaminant, including reference doses if available);

2/15 (b) which media (i.e., soil, sir surface water and ground water) are contaminated, and the estimated vertical and areal extent of contamination in each medium;

2/15 (c) the maximum concentrations of each contaminant detected on-site in the area on-site where the contaminant was discharge to the environment, and/or where the worst effects of the discharge are believed to exist;

3-1 (d) whether the contaminant has promulgated state standard, the promulgated standard and the medium (i.e., ground water, surface water, air or soil) the standard applies to;

3-4 & 3-5 (ii) a description and list of potential human and/or environmental exposure pathways pertinent to the Present Use of the property;

3-4 & 3-5 (iii) a description and list of potential human and/or environmental exposure pathways pertinent to the Future Use of the property;

2-15 (iv) a list, and map defining all source areas, areas of contamination or contaminant discharge areas;

2-15 (v) a discussion of contaminant mobilities, including estimates of contaminants to be transported by wind, volatilization, or dissolution in water. For those contaminants that are determined to be mobile and have the potential to migrate and contaminate the underlying ground water resources, the applicant should also evaluate the leachability/mobility of the contaminants. This evaluation should consider, but not be limited to, the following: leachability/mobility of the contamination; health-based ground water standards for the contamination; geological characteristics of the vadose zone that should enhance or restrict contaminant migration to ground water, including but not limited to grain size, fractures and carbon content and depth to ground water. This evaluation and any supporting documentation should be included in the plan submitted to the Department.

3-5 3) The applicant should then provide, using the information contained in the application, a risk assessment in accordance with standard EPA policy, or calculation of appropriate cleanup levels, using CDHPE hazardous Materials and Waste Management Division's "**Interim Final Policy and Guidance On Risk Assessment For Corrective Action At RCRA Facilities**" (November 16, 1993). The Department will evaluate this analysis based on an acceptable excess cancer risk of 1×10^{-6} or hazard index < 1.

VOLUNTARY CLEANUP PROPOSAL

The voluntary cleanup plan must address known or potential releases of contaminants considering the human health and environmental risks of those contaminants in both the present and future land use scenarios. The plan must demonstrate that either all applicable state standards will be met, or for contaminants where no standard exists, that the risk level has been reduced to an acceptable level (excess cancer risk of 10^{-6}, or hazard index < 1).

The remediation alternative selected should be described in sufficient detail to allow the Department to evaluate whether or not the applicant will be capable of remediating all contamination identified at the subject property within the specified 24 month time limit set down in 25-16-306(4)(a). This plan should, at a minimum, include the following information:

4-7 1) A detailed description of the remediation alternative, or alternatives selected, which will be used to remove, or stabilize contamination released into the environment.

follows
4-9 2) A map identifying areas to be remediated, the area where the remediation system will be located, if it differs from the contaminated areas, locations of confirmation samples, the locations of monitoring wells, areas where contaminated media will temporarily be stored/staged, and areas where contamination will not be remediated.

follows
4-9 3) Remediation system design diagrams showing how the system will be constructed in the field.

4-21 4) A remediation system operation and maintenance plan that describes, at a minimum, how the system will be operated to ensure that it functions as designed without interruptions and a sampling program that will be used to monitor its effectiveness in achieving the desired goal.

4-24 5) The plan should describe how the waste, or contaminated media will be managed prior to treatment, and/or disposal.

4-24 6) The plan should discuss whether or not a hazardous waste will be generated by its implementation (e.g., through the excavation of contamination, which may have been discharged prior to 1980, but which would become a hazardous waste upon being dug up or managed), and the volume of this material. The plan should also describe how such hazardous waste will managed in accordance with current state and federal hazardous waste regulations.

4-24 7) If applicable, the plan should describe the sampling program that will be used to verify that treatment of the contaminated media has resulted in a non-hazardous waste.

4-24 8) The plan should described the sampling program that will be used to verify the no contamination above the health-based cleanup standard has been allowed to remain in the environment, or at a location that could potentially threaten human health and the environment.

4-22 9) The plan should describe all sampling collection methods to be utilized along with the field and/or laboratory methods that will be used to analyze the samples.

4-27 10) The plan should include a schedule of implementation.

4-26 11) The plan should identify all permits (Federal, state and/or local including, if necessary, EPA Form 8700-12-Notification of Hazardous Waste Activity, required on the generation of hazardous waste) that will be needed before the plan can be implemented.

4-24 12) The plan should discuss the potential risks associated with the proposed cleanup alternatives, and the economic and technical feasibility of these alternatives.

4-22 13) The plan should describe the post-VCUP monitoring plan to be implemented in order to verify attainment of appropriate standards or risk levels as identified as cleanup targets.

___ 14) If not included in the risk assessment portion of the application, the plan should describe:

2-15 (a) a final list of all site contaminants, along with the remaining concentrations;

2-15 (b) a final list defining which media (i.e., soil, surface water and ground water) are contaminated, and the estimated vertical and areal extent of contamination to each medium;

2-15 (c) a final list, and map defining all source areas, areas of contamination or contaminant discharge
Figure 2-1 areas; and

4-25 (d) a description of the mechanisms for insuring that use of the land is consistent with the plan.

Voluntary Cleanup and Redevelopment Act Application for Argentine Tailings Site Rico, Colorado

1.0 GENERAL INFORMATION

1.1 Applicants

The property owners identified herein in conjunction with the Atlantic Richfield Company (collectively referred to as "Applicants") are submitting this application to the Colorado Department of Public Health and Environment (Department) in accordance with the requirements outlined in the Voluntary Cleanup and Redevelopment Act (HB94-1299) and the July 11, 1994 Draft Application Form.

The Applicants fully support the voluntary cleanup program as an effective mechanism to provide for the protection of human health and the environment and to foster both the redevelopment and reuse of mined land occupied by the inactive Argentine mill tailings facility ("Site") at Rico, Colorado (Figure 1-1). The Applicants are as follows:

1. Atlantic Richfield Company (ARCO), prior owner of certain property
2. Rico Development Corporation, current property owner
3. Rico Properties L.L.C., current property owner
4. Val Truelsen and Deanna E. Truelsen, current property owners

A portion of the lands upon which the proposed cleanup actions will occur are federal lands managed by the U.S. Forest Service ("Forest Service"). Due to jurisdictional/legal restraints, the Forest Service is not authorized to formally submit this application to the Department, and thus is not listed as an "Applicant" here. However, the Applicants have discussed this project with Forest Service representatives, who are fully supportive of the remedial objectives and purposes of the project. The Applicants will work with the Department and the Forest Service to develop a legal framework for implementation of those aspects of the project which will take place on federal lands. This process will proceed under a time frame which will allow all project components to proceed on a parallel track under the project schedule contained on page 4-27 through 4-28.

1.2 General Site Information

This section provides general site information, as specified in the application form.

1. Location and Size of Site

a. General Site Location and Size.

The Site is located on the north side of the Silver Creek approximately 0.6 mile northeast of the Rico townsite (Figure 1-2). The Site tailings ponds occupy an area of approximately 15 acres.

b. Land Description.

The Site is located in portions of the SE1/4 of the NE1/4 of the SE1/4 and NE1/4 of the SE1/4 of the SE1/4 of Section 25, T40N, R11W; and the NW1/4 of the SW1/4 of Section 30, T40N, R10W, NMPM, Dolores County (Figures 1-2 and 1-3).

The Site comprises San Juan National land and various portions of the following patented claims (Figure 1-3):

Claim Name	Patent No.	Mineral Survey No.
Moyer	33693	13379
EBY	24278	7066
Royal Tiger	9859	1190
Missouri	25321	7898
Last Chance	27745	8622
Catskill	21923	7062
Elliot Millsite	9764	1536B

2. Property Owner and Contact Person

a. Moyer claim
Book 120, Page 187, Dolores County Clerk

Val Truelsen and Deanna E. Truelsen
P.O. Box 458
Dolores, CO 81323
Contact: Val Truelsen (970) 882-7383

b. EBY, Royal Tiger and Missouri claims
Book 238, Page 309, Dolores County Clerk

Rico Development Corporation
P.O. Box 130
Rico, CO 81332
Contact: Wayne E. Webster, President (970) 967-2932 or (903) 677-1679

c. Last Chance, Catskill and Elliot Millsite claims
Book 266, Page 453, 455 and 456, Dolores County Clerk

Rico Properties, L.L.C.
P.O. Box 220
17 Glasgow Avenue
Rico, Colorado 81332
Contact: Stan Foster, Manager (970) 967-5441

d. Contact point for lands within San Juan National Forest:

Supervisor's Office
701 Camino del Rio
Durango, Colorado 81301

3. Type and Source of Contamination

Heavy metals (i.e., copper, iron, lead, and zinc) contained in historic mill tailings derived from sulfide ore and surface seep.

4. Site Coordinates

N22800, E24900 (center of Site) based on Town of Rico survey coordinate system where N20000, E20000 is the point of intersection of Glasgow Avenue (highway 145) and Mantz Street. Global positioning system coordinates are not available.

5. Statement of Request for Approval

Applicants request approval of the Voluntary Cleanup Plan (VCUP).

6. Current Land Use

Undeveloped inactive mill tailings disposal site.

7. Proposed Land Use

Continued historic inactive mill tailings site with light industrial components (e.g., garages, parking areas, warehouses).

1.3 Program Inclusion Questionnaire

This section answers the questions listed in the application form as required to determine that the applicants meet the criteria for eligibility under the Act. An answer "yes" to question 1 and "no" to questions 2-6 indicate a determination that the application is eligible for the Voluntary Cleanup Program.

1. *"Is the applicant the owner of the property for the submitted VCUP or NAD? IF yes, verify ownership."*

   Yes. All applicants except ARCO are current owners of certain properties for the submitted VCUP. Ownership is verified according to Book and Page number of applicable conveyance instruments on record with Dolores County Clerk (See Section 1.2).

2. *"Is the property submitted for the VCUP or NAD listed or proposed for listing on the National Priorities List of Superfund sites established under the federal act (CERCLA)?"*

   No.

3. *"Is the property submitted for which the VCUP or NAD the subject of corrective action under orders or agreements issued pursuant to the provisions of Part 3 of Article 15 of this Title or the federal "Resources Conservation and Recovery Action of 1976", as amended? If yes, please list order number."*

   No.

4. *"Is the property submitted for the VCUP or NAD subject to an order issued by or an agreement (including permits) with the Water Quality Control Division pursuant to Part 6 of Article 8 of this Title? If yes, please list order or permit number."*

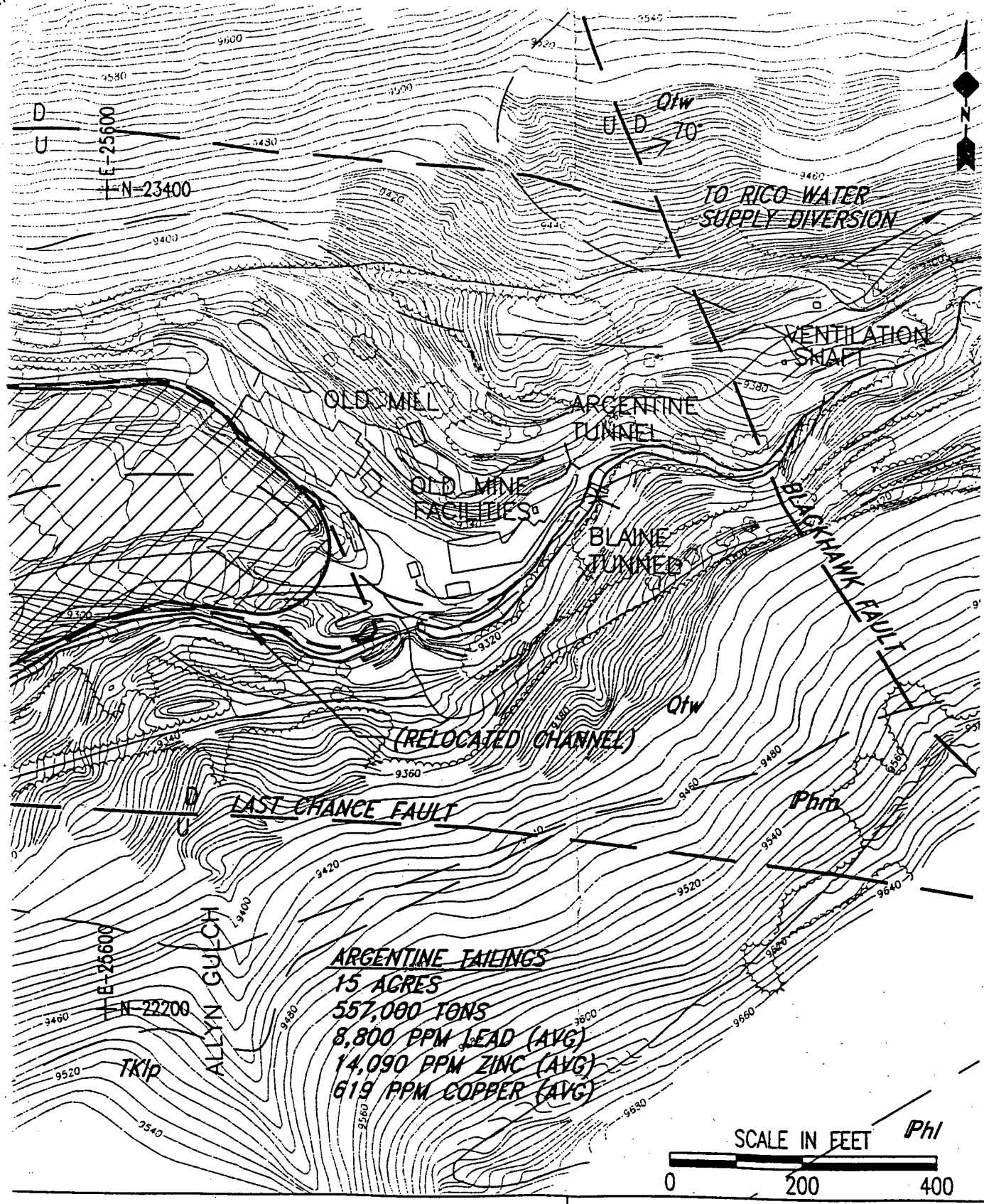
   No.

5. *"Is the property submitted for the VCUP or NAD a facility which has or should have a permit or interim status pursuant to Part 3 of Article 15 of this Title (RCRA Subtitle C) for treatment, storage, or disposal of hazardous waste? Yes, please list permit number."*

   No.

6. *"Is the property submitted for the VCUP or NAD subject to the provisions of Part 5 of Article 20 of Title 8 (Underground Storage Tank - State Oil Inspector), C.R.S. or of Article 18 of this Title (RCRA Subtitle I)?"*

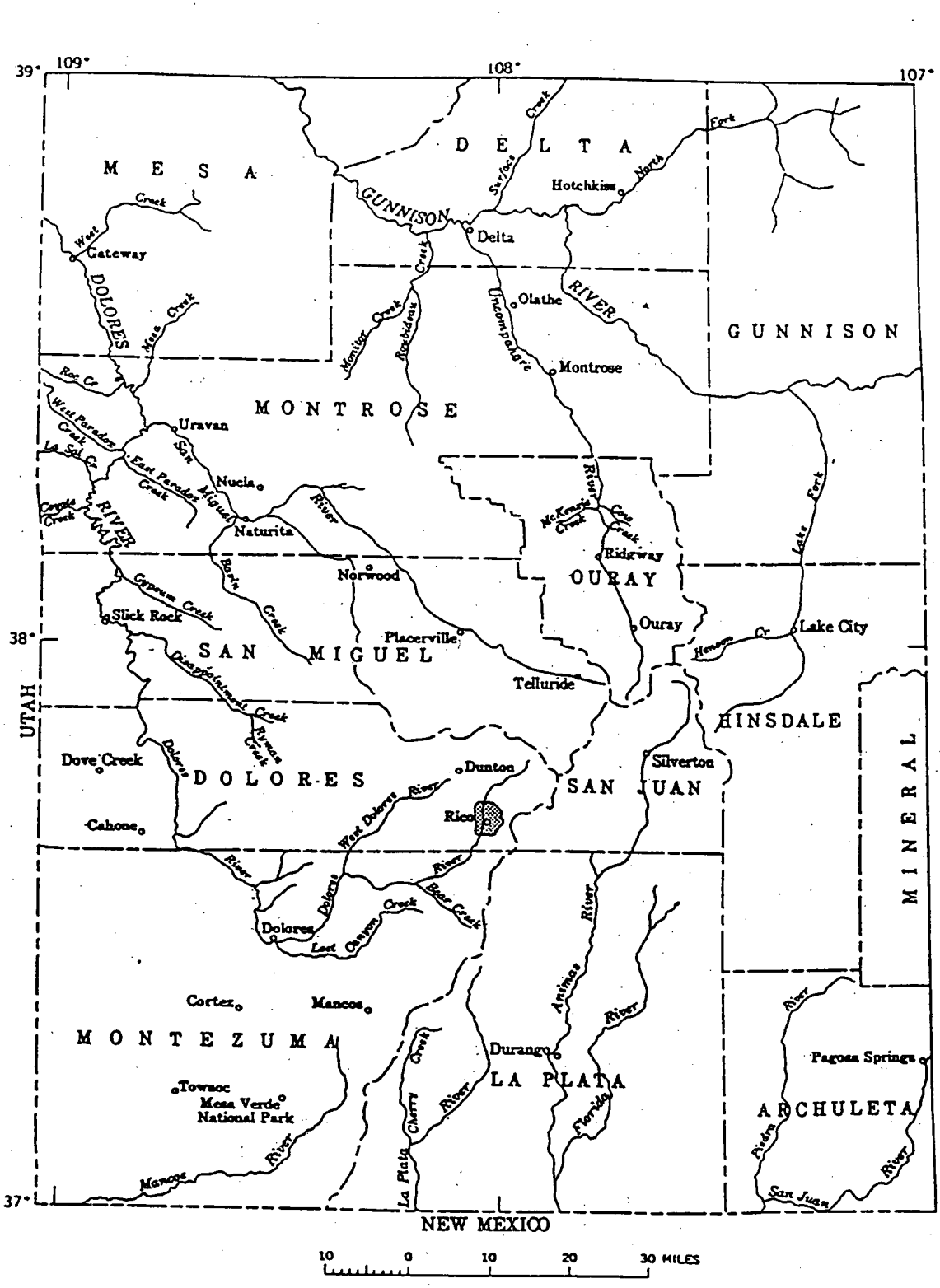
   No.



AT-A WATER QUALITY SAMPLING LOCATION (AT=ARGENTINE TAILINGS;A&B= SEEP DISCHARGE)

ARGENTINE TAILINGS SITE
SITE FEATURES MAP

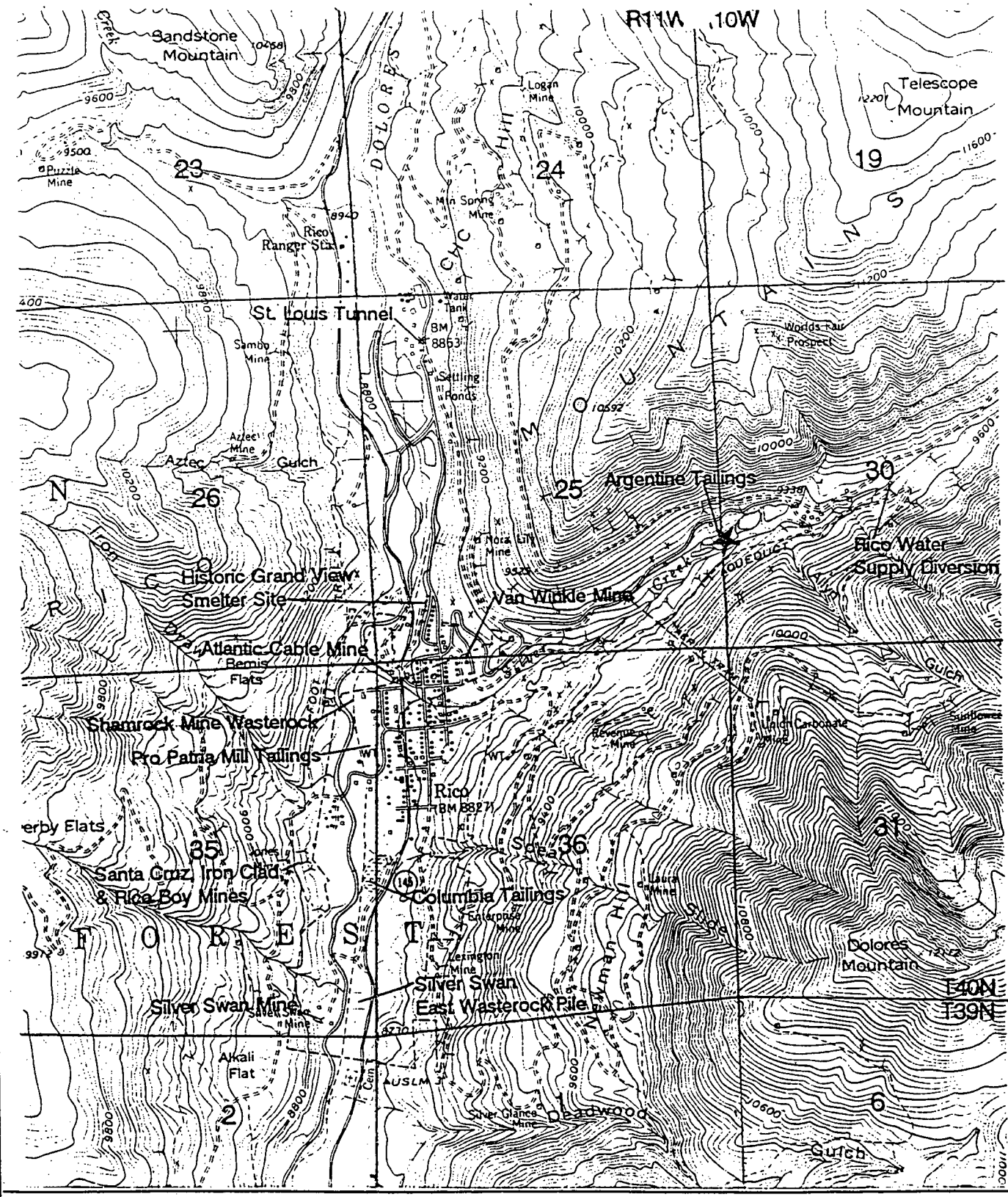
FIGURE 2-1



COLORADO

RICO DISTRICT
LOCATION MAP

FIGURE 1-1

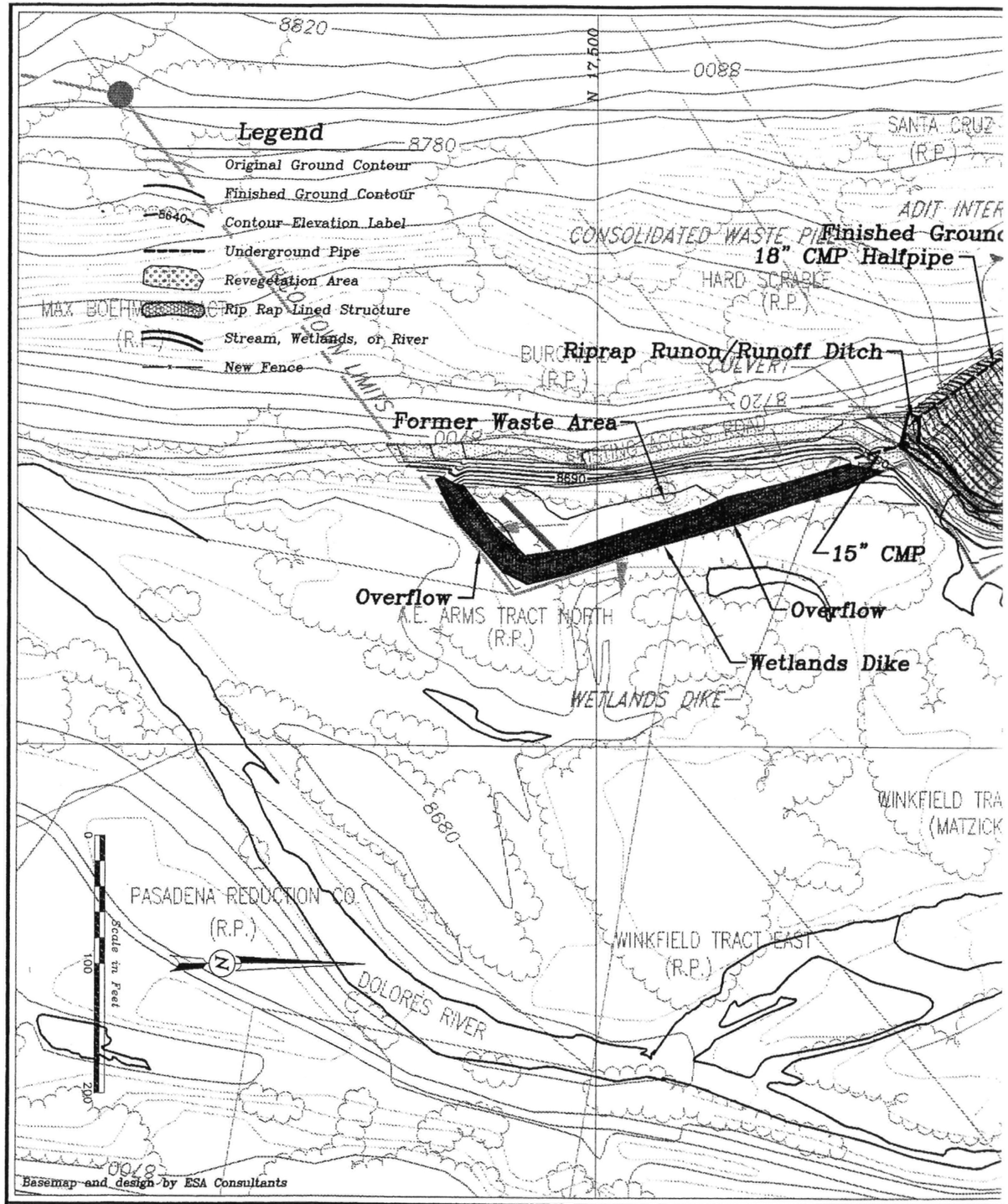


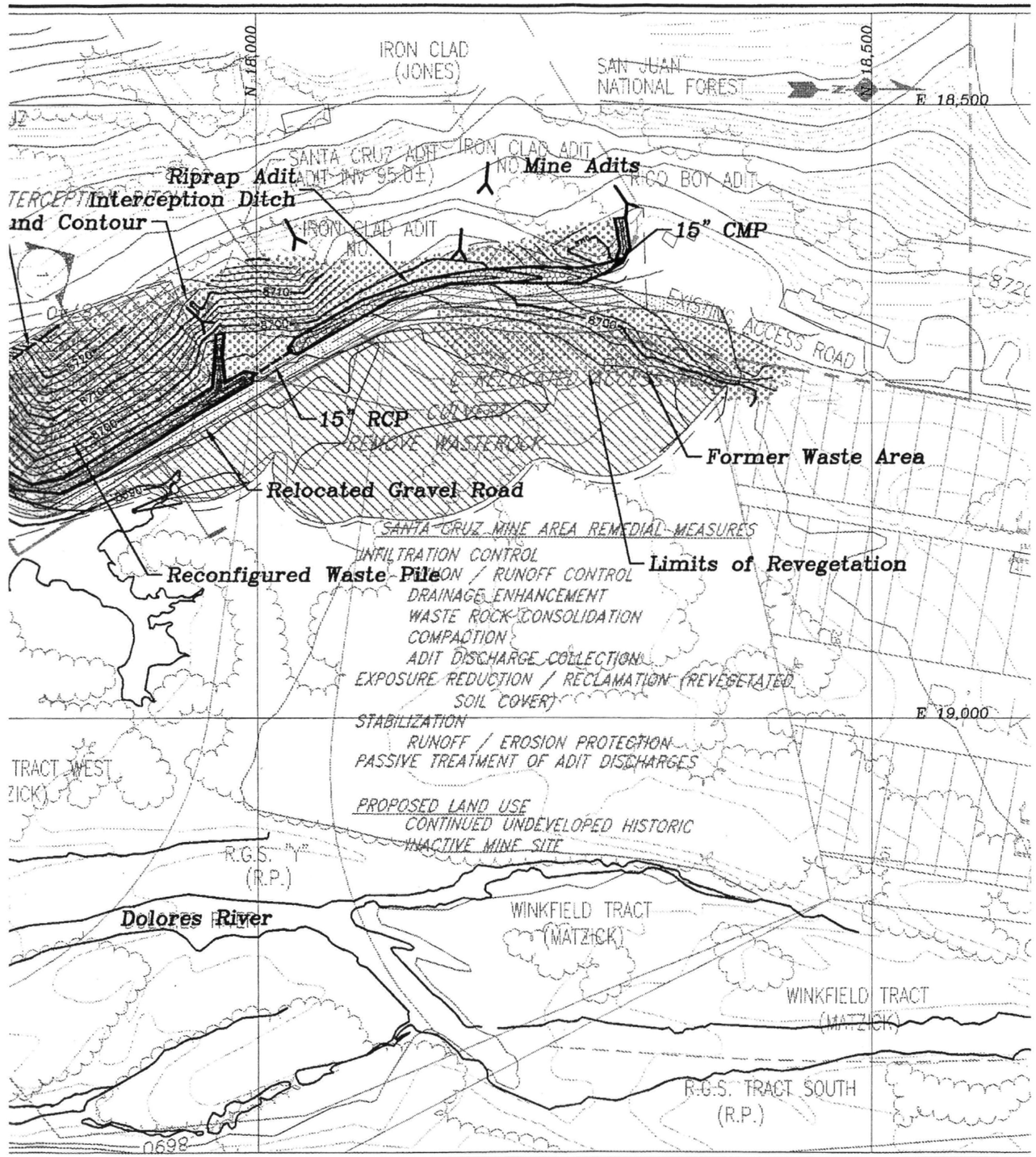
ARGENTINE TAILINGS
SITE LOCATION MAP

FIGURE 1-2

Section lines added.

Base Map: USGS Rico Quadrangle, Colorado, 7.5 Minute Series.





ATLANTIC RICHFIELD COMPANY
RICO MINING AREA
CONSTRUCTION COMPLETION REPORT

ANDERSON ENGINEERING CO., INC.
975 West 2100 South Street Suite 100
Salt Lake City, UT 84119
Tel. (801) 972-6222

NO.	REVISION/DESCRIPTION	DATE

DRAWN BY:	R. TATE
CHECKED BY:	S. ANDERSON
CLIENT CONTACT:	R. ELLIOTT
SCALE:	1" = 100'
OTHER REFS:	sc_prop.dwg, sc_plan.dwg

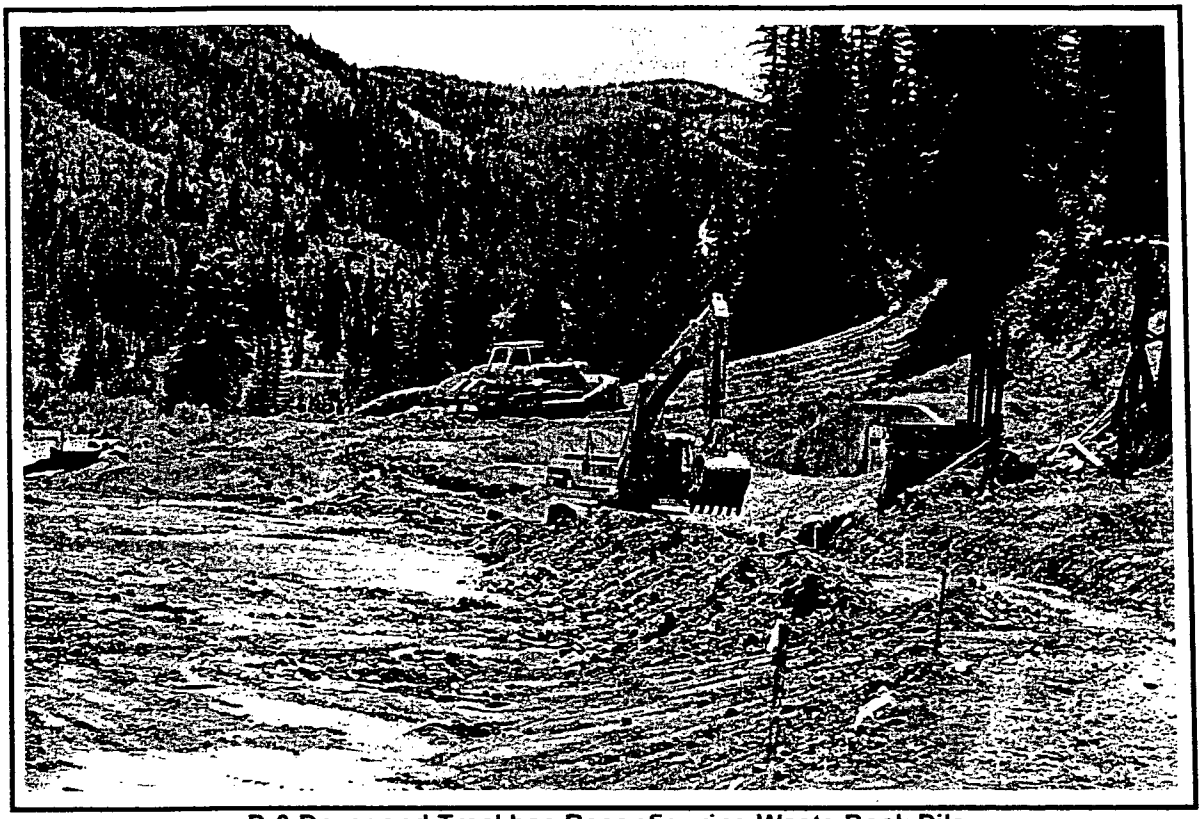
SANTA CRUZ MINE AREA FINAL CONFIGURATION PLAN VIEW

References: scconcep.dwg, sc_econt.dwg

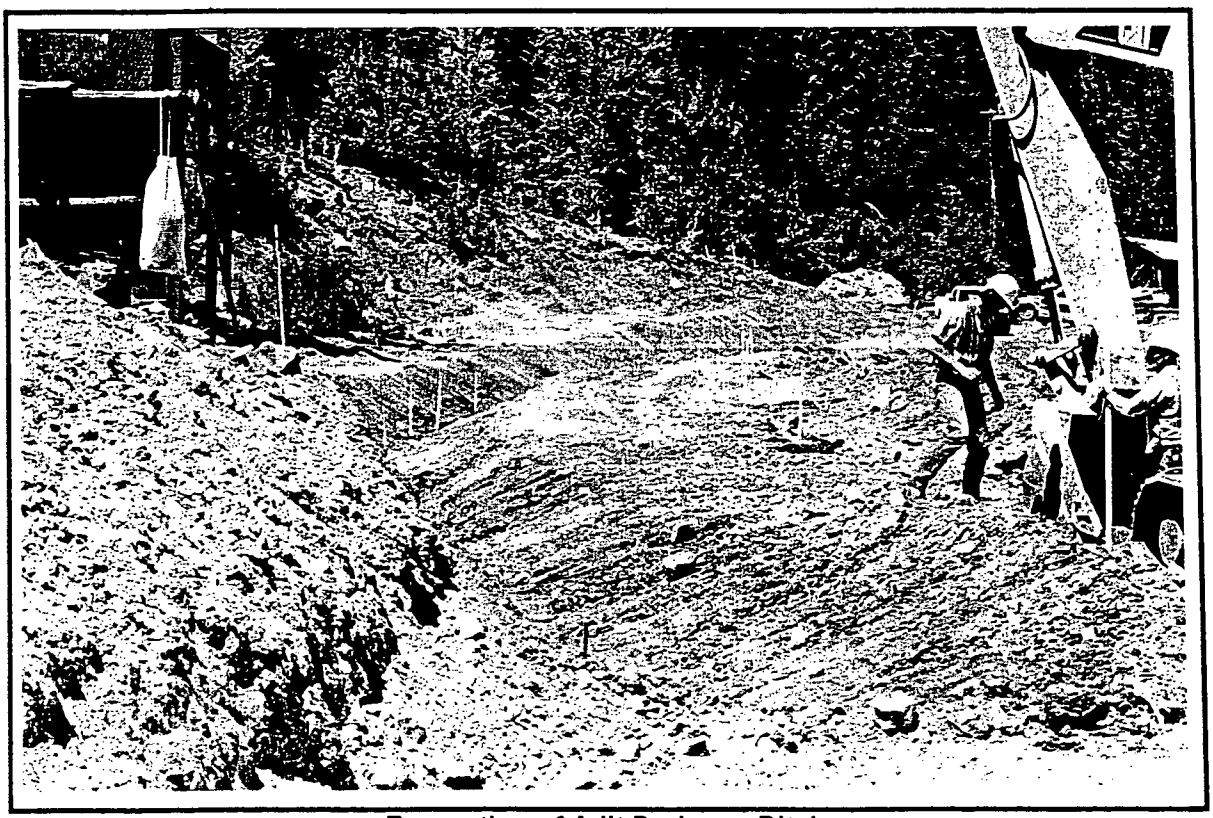
FIG. 5-1

File: S_CRUZ.DWG view (plan)

5.13 Photographs



D-8 Dozer and Trackhoe Reconfiguring Waste Rock Pile



Excavation of Adit Drainage Ditch

6.0 Grand View Smelter Site

6.1 General

The Grand View Smelter Site is located on the east side of State Highway 145 at the north end of the Town of Rico. This Site contains approximately 1.7 acres and was originally used as a smelter facility. The Site consists of waste materials over a natural ground surface. Slopes are moderate and two dirt roads traverse the area.

6.2 Permit

The VCRA application dated April 12, 1996 and supplements to the application dated June 17, 1996 were approved by the CDPHE on June 21, 1996. The CDPHE approval stated that the VCUP would meet a degree of clean up and control of hazardous substances such that the property does not present an unacceptable risk to human health or the environment based on the property's proposed use as an open space. The approved VCUP remedial design for the Grand View Smelter Site involves removal of a small waste pile, construction of drainage control features, placing a reclamation cover over a portion of the Site which consists of plant growth medium and amendments and revegetation.

6.3 Geohazards

No natural engineering or geotechnical hazards were encountered during construction activities at the Grand View Smelter Site. No preconstruction hazard control measures were required due to the limited activity associated with the work at the Site.

6.4 Site Access

Access to the Site is through existing public roads at the north end of the Town of Rico. Access to the Columbia where the removed waste was stabilized is on State Road 145 and through the newly constructed access road from State Highway 145 to the Columbia. All roads were maintained and left in as good or better condition than existed prior to their use on this project.

6.5 Construction Site Controls

Controls were implemented during construction to address requirements of applicable federal, state or local permits, codes or regulations. All construction and

5.13 Photographs

6.0 Grand View Smelter Site

6.1 General

The Grand View Smelter Site is located on the east side of State Highway 145 at the north end of the Town of Rico. This Site contains approximately 1.7 acres and was originally used as a smelter facility. The Site consists of waste materials over a natural ground surface. Slopes are moderate and two dirt roads traverse the area.

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6.5 Construction Site Controls

Controls were implemented during construction to address requirements of applicable federal, state or local permits, codes or regulations. All construction and

specifications employed appropriate Best Management Practices to protect the Dolores River from sedimentation during remedial activities. Temporary grading to control runoff to the Dolores River were constructed in work or active traffic areas. Construction activities were conducted in a manner to preserve existing vegetation buffers in the work areas. Strict precautions to avoid dust and excavation spillage during operations were followed by the use of water spray and control of load heaping on haul units.

The onsite construction activities were conducted in strict compliance with the VCUP Site Specific Safety and Health Plan and Site Pre-Excavation Construction Plans as well as Stormwater and COE Permits obtained for the specific work area.

6.6 Hydraulic Controls

6.6.1 Runon

Runon generated from rainfall or snowmelt upland of the Site is of a very minor quantity and the existing slopes were maintained and are sufficient to promote controlled flow of stormwater. The two roads existing on Site also contribute to reducing runoff velocities at peak flow and direct runon away from the site. The newly constructed road entering the Grand View area was constructed with a small "v" notch diversion ditch on the west side of the road. Figure 6-1 shows the road alignment and the location of the adjacent drainage.

6.6.2 Runoff

The slopes and general flow pattern of the Site was maintained after removal activities. The existing slopes are sufficient to promote controlled runoff. Flow across the Site enters existing drainages along the west side of the highway and flows from the Site. Final shaping of the Site, the road fill and parallel drainage ditch, and also cover materials placed on this area contribute to adequate drainage of runoff.

6.6.3 Infiltration

Reclamation cover was placed over the Grand View area consisting of 1 ft. of plant growth medium. The combination of growth medium and Site drainage provides adequate removal of stormwater.

6.6.4 Drainage Stabilization

The northwest embankment slope of the Grand View Site adjacent to the Dolores River was protected from potential flood flows by the construction of flood protection revetment. The revetment consists of riprap and bedding materials. Type A riprap was placed as a scour toe. Type A riprap was also placed on the prepared river bank. Riprap was bedded with 6 inches of Type D and 6 inches of Type E material. Figure 6-1 contains the revetment location at the Grand View Site. Riprap materials existing in this river area were reused and pushed adjacent to the constructed revetment.

6.7 Waste Materials

6.7.1 Surface Shaping and Slopes

A small area occupied by waste was graded to conform to the adjacent land shape.

The area of grading occupies about 0.25 acres. The majority of the surface at the Grand View Site is adequately drained with stormwater draining.

6.8 Erosion Protection

6.8.1 Growth Medium

A small amount of borrow soil was placed at the Grand View area to promote vegetation growth for erosion control. Approximately 800 cubic yards of material were spread adjacent to the road and over the area where the waste material was removed. No lime amendments were required at the Grand View Site.

6.8.2 Revegetation

The seed mix used at the Grand View Site was Type A and is as shown on Table 6.1.

Table 6.1
Grand View Smelter Site
Seed Mixtures and Application Rates

Type A General Seed Mixture			
Species	Preferred Variety(s)	Rate (lbs./acre) Planted (broadcast)	PLS (seeded/acre)
Big bluegrass Poa ampla	Sherman	0.50	458,500
Mountain brome Bromus carinatus	Bromar	8.00	496,000
Slender wheatgrass Agropyron trachycaulum	Primar, San Luis	3.00	480,000
Streambank wheatgrass Agropyron riparium	Sodar	3.00	480,000
Birdsfoot trefoil Lotus corniculatus	Empire	1.00	410,000
Lewis flax Linum lewisii	Apar	2.00	570,000
Rocky Mountain penstemon Penstemon strictus	Bandera	1.00	592,000
Cicer milkvetch Astragalus cicer	Lutana, Monarch	1.50	290,000
	Totals	**20.00**	**3,776,500 (approx. 87 seeds per square foot)**

All seed was applied using hydroseeding methods due to wet surface conditions and seasonal constraints. The hydroseeding and fertilization sequence of activity completed is as shown on Table 6.2. Mulch was also spread by hydro application methods and held in place by tacking agents.

Table 6.2
Grand View Smelter Site
Revegetation Sequence

Item	Seed Bed Preparation	Fertilizer	Seed	Mulch
Period	Prior to fertilization and seeding.	Concurrent with hydroseeding.	After September 30th, immediately following final seed bed preparation.	Immediately following seeding.
Method	Mechanical scarification of soil.	Combined with hydroseeding, liquid fertilizer mixture.	Hydroseeding on all areas.	Hydromulch - 1500 lbs./acre, slopes 2:1 and steeper. Slurry pH>3.5.
Equipment	Disc or rippers pulled by tractor.	Mobile hydroseeding equipment.	Mobile hydroseeding with spray and tank equipment.	
Discing/Raking	Disc or rip to 12 inch depth maximum.			
Other	Insure adequate seed bed without hard surface resistant to seed placement.	Nutrient application applies to all sites: Nitrogen (lb./acre) 40 Phosphate (lb./acre) 60 Potash (lb./acre) 40	Type A General seed mix (<3:1)	Purpose: twofold: 1. Conserve water 2. Deter erosion
Note:	Ripping of final graded surface completed prior to broadcasting fertilizer. Ripped to a maximum depth of 12 inches.			

6.8.3 Riprap

Riprap was placed along the Dolores River Bank for flood protection of the Grand View area. The riprap involved placement of a scour protective toe consisting of Type A riprap approximately 3.6 ft. thick below average water level. Additional Type A riprap about 2 ft. thick was placed over the outslope to protect against flood waters. The riprap materials were underlaid by Type D and Type E bedding. The riprap materials and bedding are shown on Table 6.3. Riprap material existing in this river area was released and pushed adjacent to the constructed revetment.

Table 6.3
Grand View Smelter Site, Riprap and Bedding

		Percent Passing					
Type	**Description**	**100**	**85**	**50**	**30**	**15**	**0**
A	Riprap	1.7-2.4'	-	1.4'-1.6'	1.2'	0.9'	0.8'
B	Riprap	Larger Rock Material Generated By Borrow Processing					
C	Riprap	0.9-1.2'	-	0.7-0.8'	0.6'	0.5-0.65'	0.4
D	Riprap/Bedding	3.0-8.0"	3.0-6.0"	-	-	0.75"-1.5"	0"-0.5"
E	Filter Material	2.0"	0.5-1.5"	-	-	0.5-0.65mm	0.6mm

6.9 Quantity Summary

The quantities moved for implementation of the VCUP for the Grand View Tailings involves four categories of materials. The total volume of material moved was 900 cubic yards. Table 6.4 contains the volume of material moved by category for earthwork at the Grand View Site.

Table 6.4
Grand View Smelter Site
Relocated Material Quantities

Activity	Material Type	Units	Quantities
Growth Medium		CY	800
Revetment	Type A	CY	128
Revetment	Type D	CY	22
Revetment	Type E	CY	22

6.10 Soil Testing Summary

No soil testing was required at the Grand View Site.

6.11 As Built Drawings

Basemap and design by ESA Consultants

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CONSTRUCTION COMPLETION REPORT

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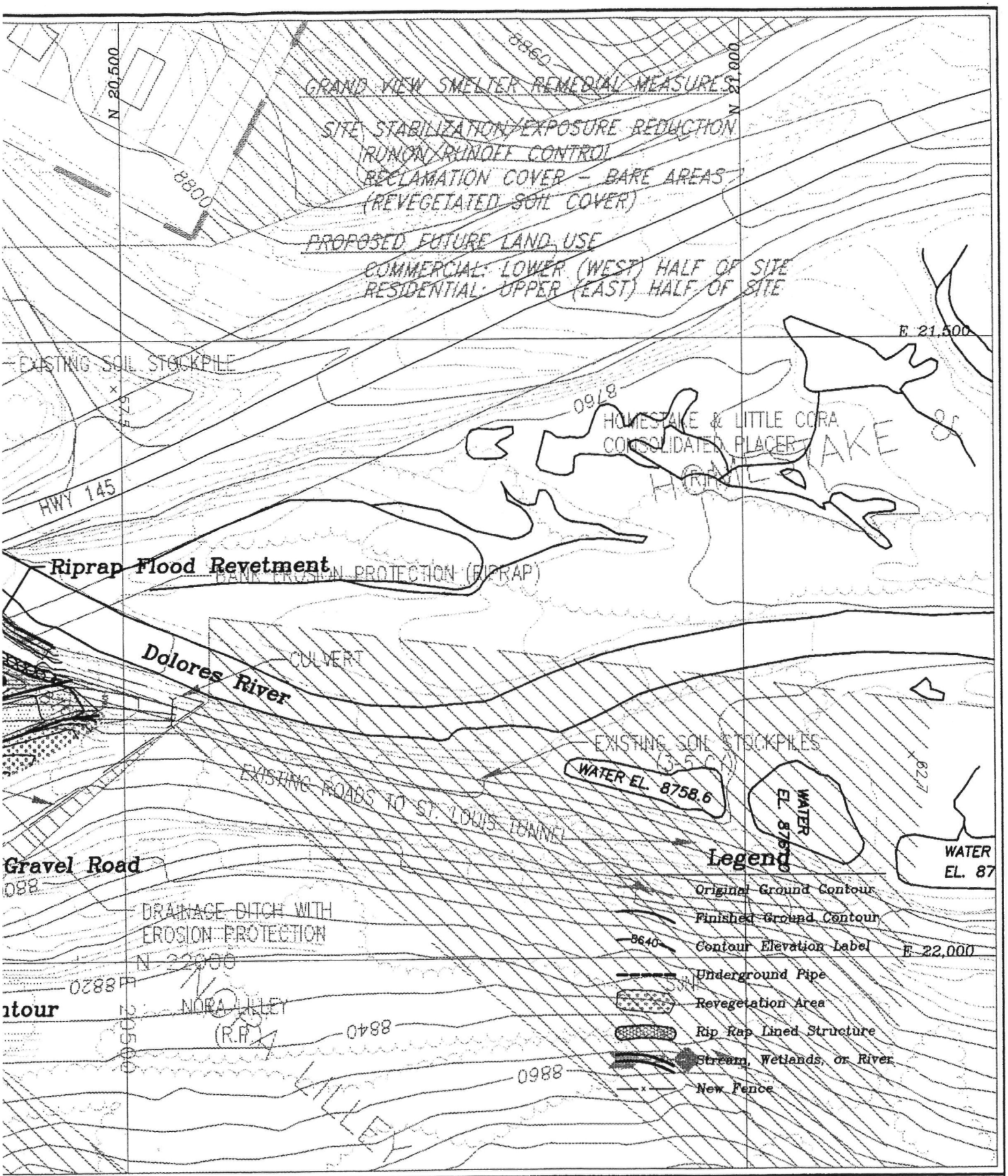


	DATE		
		DRAWN BY:	R. TATE
		CHECKED BY:	S. ANDERSON
		CLIENT CONTACT:	R. ELLIOTT
		SCALE:	1" = 100'
		OTHER REFS:	gv-econt.dwg, gv-prop.dwg

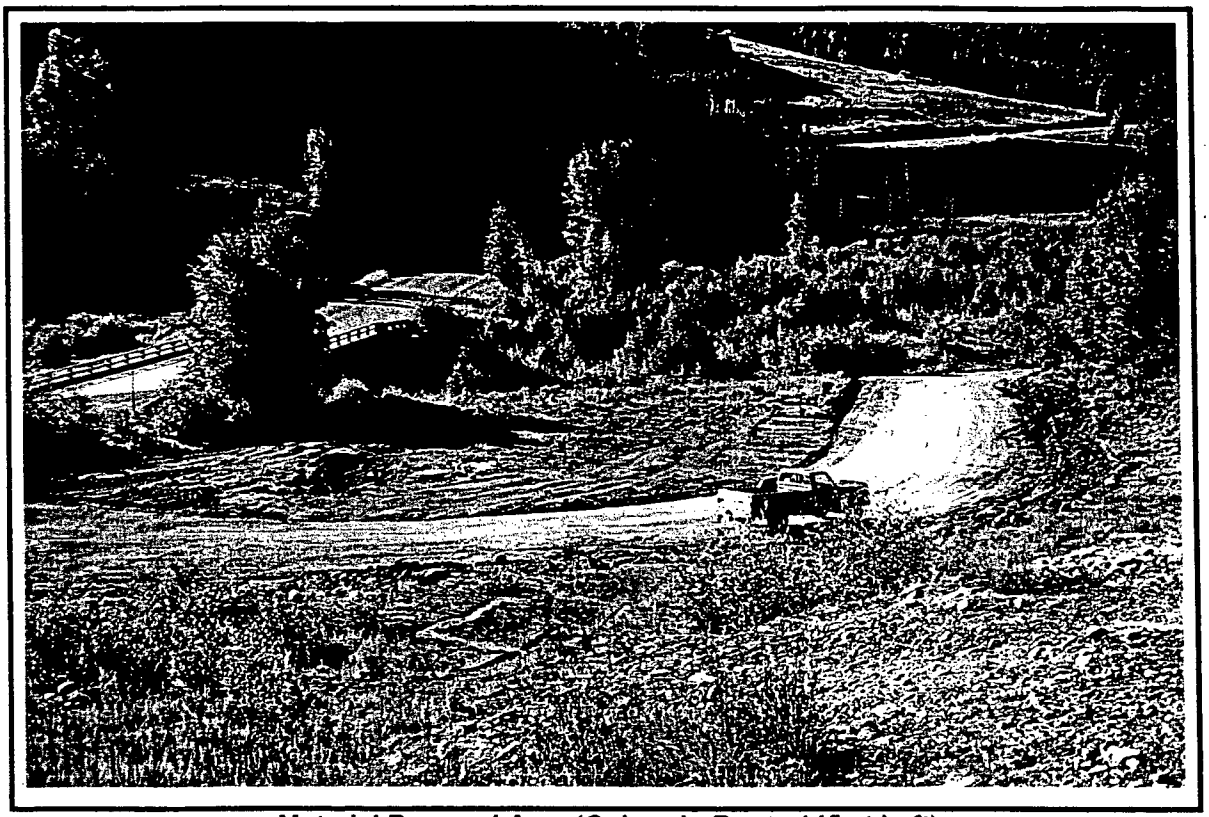
GRAND VIEW SMELTER AREA
FINAL CONFIGURATION PLAN VIEW

References: gv-concep.dwg, gv-plan

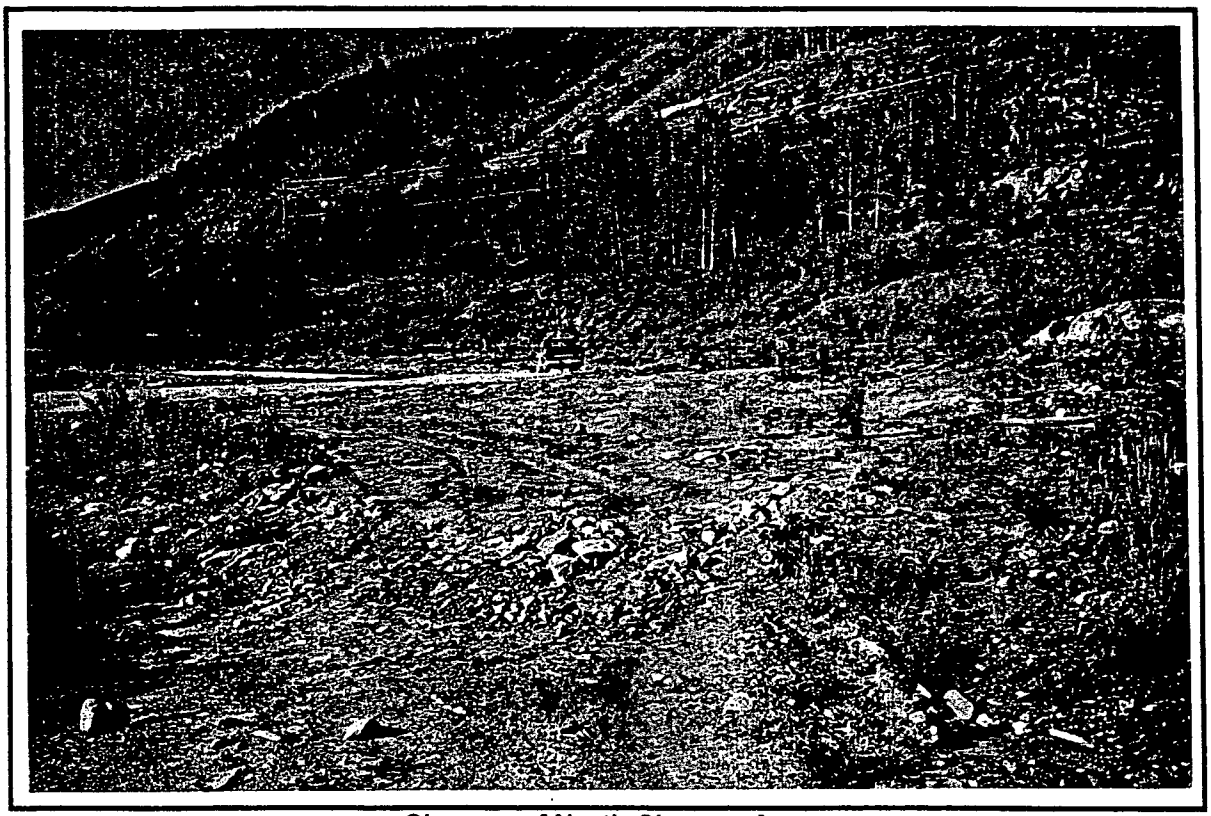
FIG. 6-1

File: G_VIEW.DWG view (plan)

6.12 Photographs



Material Removal Area (Colorado Route 145 at Left)



Closeup of North Cleanup Area

7.0 Borrow Sites

7.1 St. Louis Borrow

The St. Louis Borrow Site is located adjacent to the St. Louis Tunnel approximately 3/4 mile north of the Town of Rico. The borrow area is situated against the hill east of the Dolores River and occupies just under 3 acres. A screening plant was set up to produce the various types of riprap products and processed growth medium. The riprap materials are described in earlier sections. Processed growth medium material is 3/4 inch minus. Access to the Site was by a combination of private roads and USFS. A Special Use Permit with the USFS was obtained for activities related to transport of this borrow material over USFS access roads. The conditions of this permit were totally complied with.

A total of 25,784 cubic yards was extracted from the St. Louis borrow area. The various riprap and growth medium products were processed and transported to the reclamation areas primarily along the Dolores River corridor. No stockpiles of produced materials remained at the Site after work completion.

The area in the immediate vicinity of the borrow site operations was graded to promote drainage and comply with the pre-construction Work Plan. The slopes were configured to a 3h:1v geometry with an intermediate 10 ft. wide bench. Figure 7-1 shows the final surface topography of the Site.

Following land shaping, the borrow area was seeded. The seed bed soil was in a loose condition and ready for seeding. Fertilizer was broadcast at a rate of 40 lbs. N, 60 lbs. $P_2 0_5$ and 40 lbs. $K_2 0$ per acre. All seed was applied using hydroseeding methods. Mulch was applied using hydromulching equipment. Tacking agents were also applied to secure the mulch on the seeded area. Table 7.1 shows the seed mix used for the St. Louis Borrow Site.

Table 7.1
St. Louis Borrow

Type B Sideslope Stabilization Mixture			
Species	**Preferred Variety(s)**	**Rate (lbs./acre) Planted (broadcast)**	**PLS (seeded/acre)**
Big bluegrass Poa ampla	Park	0.50	1,100,000
Mountain brome Bromus carinatus	Bromar	15.00	975,000
Slender wheatgrass Agropyron trachycaulum	Primar, San Luis	6.00	960,000
Streambank wheatgrass Agropyron riparium	Sodar	6.00	960,000
Cicer milkvetch Astragalus cicer	Lutana, Monarch	1.50	290,000
	Totals	**29.00**	**4,285,000 (approx. 98 seeds per square foot)**

7.2 Argentine Borrow

The Argentine Borrow Site is located approximately 0.2 miles northeast of the Argentine Tailings Site. The borrow area is situated in a sloping area north of Silver Creek and occupies about 2 acres. A screening plant was set up to produce the various types of riprap products and processed growth medium. The riprap materials are described in earlier sections. Processed growth medium material is 3/4 inch. Access to the Site was by a combination of private roads and by a USFS roads. A Special Use Permit with the USFS was obtained for activities related to transport of this borrow material over USFS access roads. The conditions of this permit were totally complied with.

A total of 23,700 cubic yards was extracted from the Argentine borrow area. The unprocessed borrow was extracted and transported to the reclamation areas mainly at the Argentine Tailings. No stockpiles of produced materials remained at the Site after completion of the work.

The area in the immediate vicinity of the borrow site operations was graded to promote drainage and comply with the pre-construction Work Plan. The slopes were configured to a 3h:1v geometry with two intermediate 10 ft. wide bench. Figure 7-1 shows the final surface topography of the Site.

Following land shaping, the borrow area was seeded. The seed bed soil was in a loose condition and ready for seeding. Fertilizer was broadcast at a rate of 40 lbs. N, 60 lbs. $P_2 0_5$ and 40 lbs. $K_2 0$ per acre. All seed was applied using hydroseeding methods. Mulch was applied using hydromulching equipment. Tacking agents were also applied to secure the mulch on the seeded area. Table 7.2 shows the seed mix used for the Argentine Borrow Site.

Table 7.2
Argentine Borrow

Type B
Sideslope Stabilization Mixture

Species	Preferred Variety(s)	Rate (lbs./acre) Planted (broadcast)	PLS (seeded/acre)
Big bluegrass Poa ampla	Park	0.50	1,100,000
Mountain brome Bromus carinatus	Bromar	15.00	975,000
Slender wheatgrass Agropyron trachycaulum	Primar, San Luis	6.00	960,000
Streambank wheatgrass Agropyron riparium	Sodar	6.00	960,000
Cicer milkvetch Astragalus cicer	Lutana, Monarch	1.50	290,000
	Totals	**29.00**	**4,285,000 (approx. 98 seeds per square foot)**

7.3 Cayton Borrow

The Cayton borrow area is located near the Cayton Campground on USFS land approximately 6 miles north of Rico, Colorado. An estimated 2500 cubic yards of borrow material exists at this borrow area. This material was made available to the VCRA application for reclamation use on sites near Rico. The Cayton borrow

occupied less than ½ acre. The material was unscreened and primarily used for fill purposes and removed by a daytime (8:00 a.m. to 5:00 p.m.) loader and truck operation. In order to obtain and haul this material, a Road Use and Special Use Permit were obtained from the USFS. These permits were totally complied with during removal of the fill material from the Cayton borrow area. Figure 7-3 shows final surface topography of the Site.

Under the terms of the USFS Permit the following procedures were observed to stabilize the Site after removal of the fill. The Site was graded to drain without concentration of flow. The seed bed soils were analyzed for fertility. Fertilizer was broadcast into the roughed seed bed at a rate of 40 lbs. of N, 60 lbs. of P205, and 40 lbs. of K20 per acre.

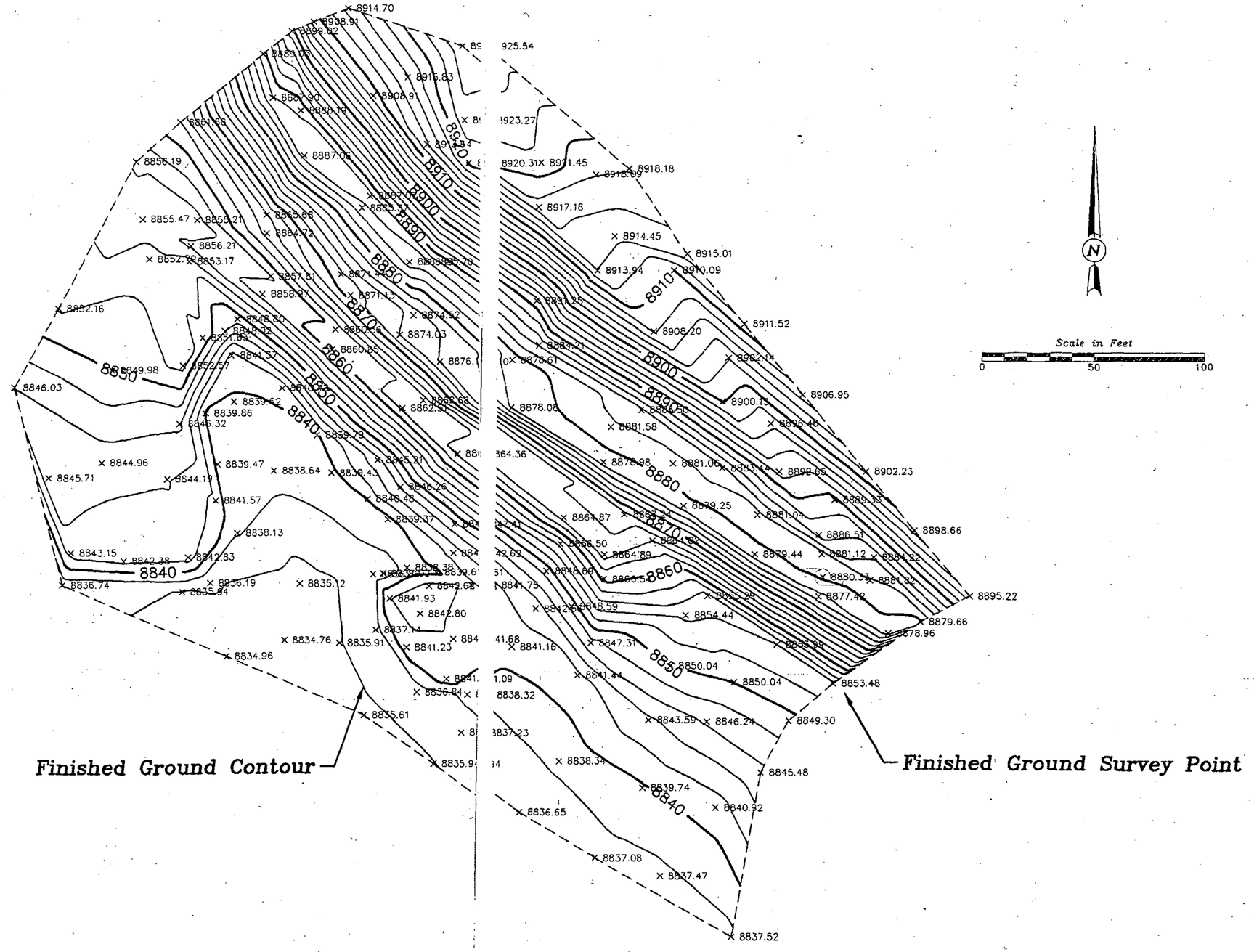
Seeding of disturbed areas will be with the following seed mixture (Table 7.3). Seed was certified weed free and included the following. This mixture was applied by hydroseeding methods.

Table 7.3
Cayton Borrow
Stabilization Mixture

Species	Rate (lbs./acre)
Annual ryegrass	3 lbs./acre
Mountain brome	10 lbs./acre
Canadian wildrye	9 lbs./acre
Tuffted hairgrass	3 lbs./acre
Totals	**25 lbs./acre**

Mulch was applied to all disturbed areas following seeding. The disturbed area was hydromulched at a rate of 2,000 lbs. per acre. A rate of 1,500 lbs. per acre was used on slopes of 3:1 or less steep. Mulch anchoring was accomplished through the addition of a tackifier included with the mulch slurry.

7.4 As Built Drawings



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SCALE:	1" = 50'
OTHER REFS:	.

ST. LOUIS BORROW AREA
FINAL CONFIGURATION PLAN VIEW

References:
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FIG. 7-1

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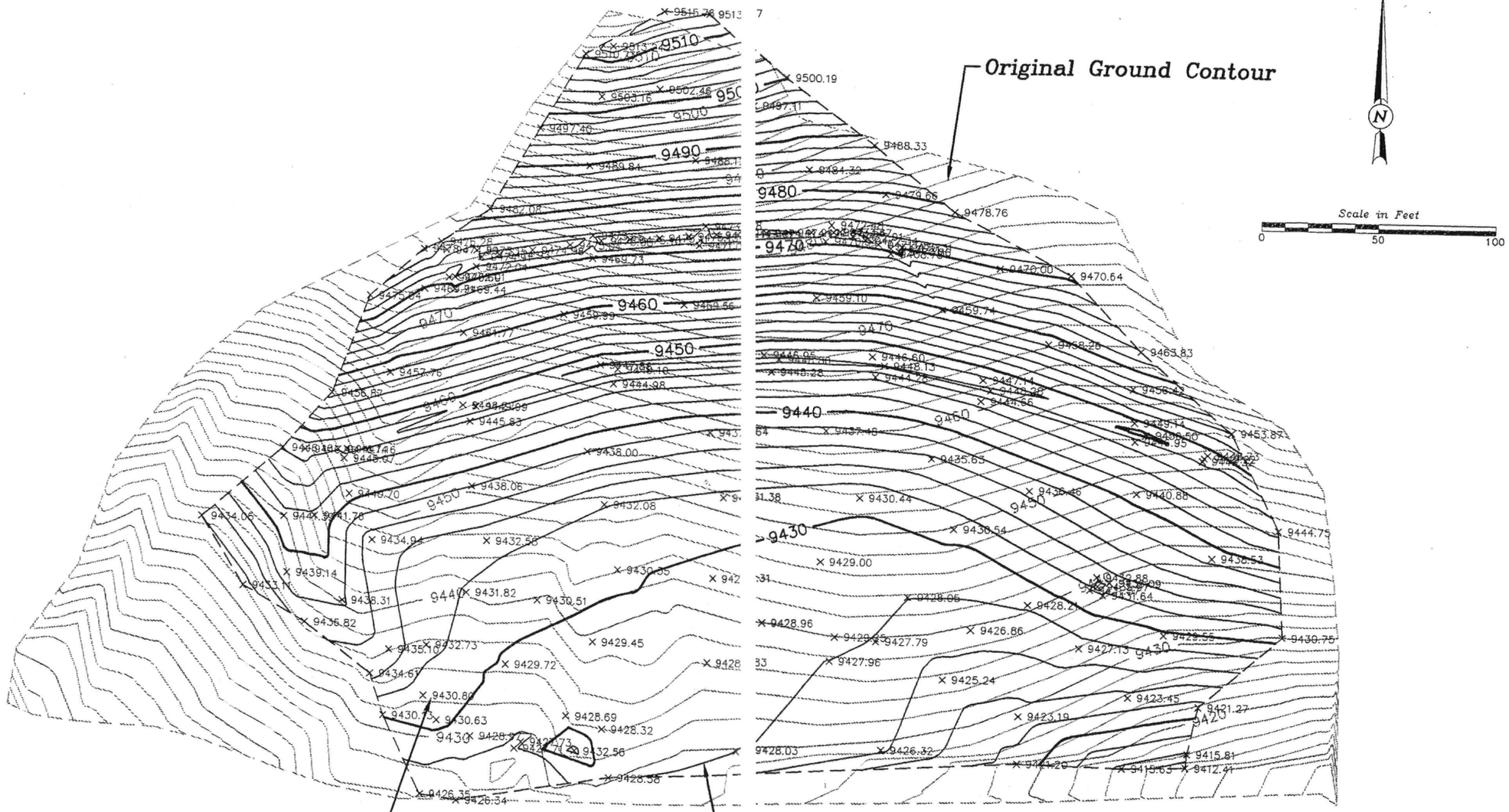
STLOUIS.DWG
view (plan)



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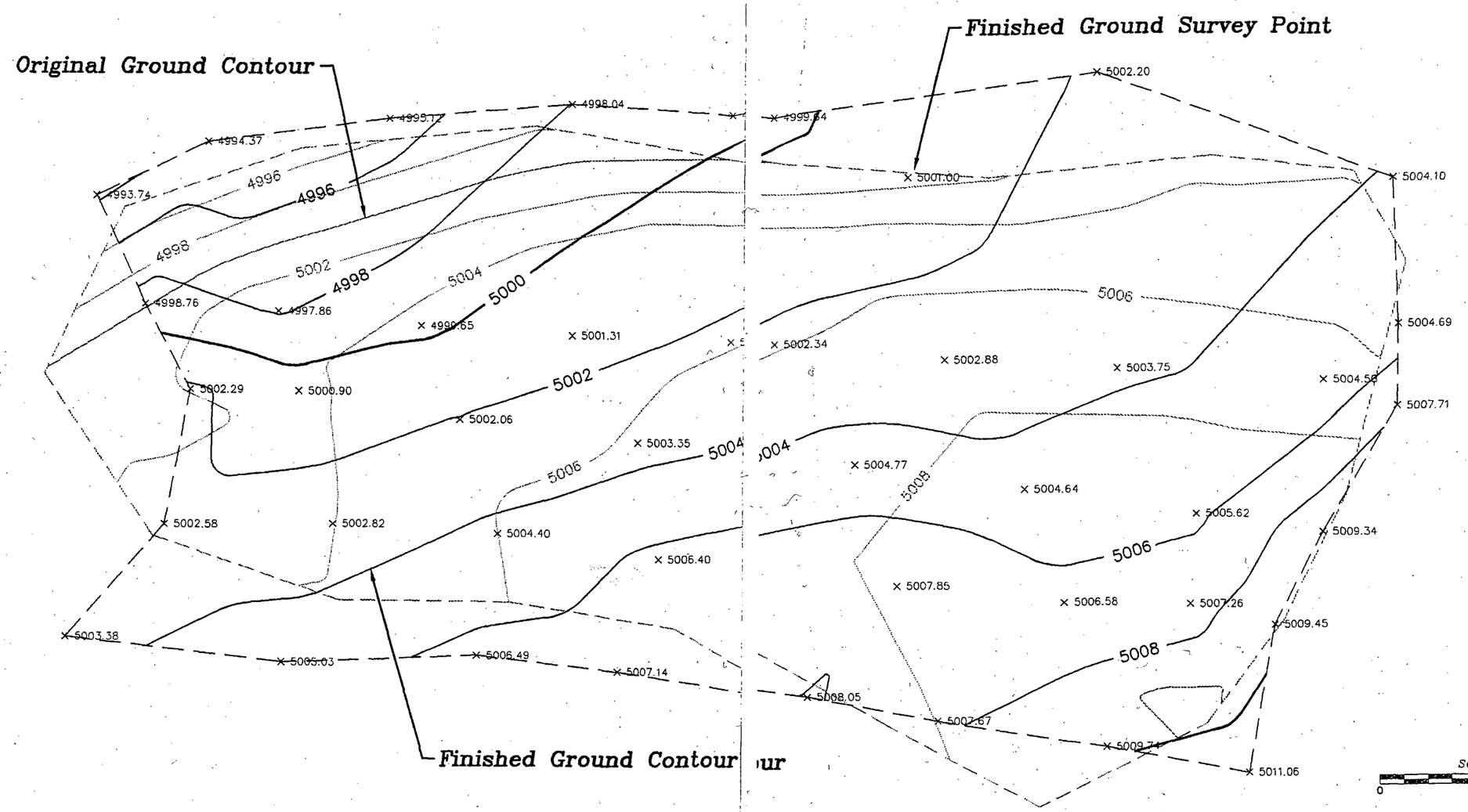
ARGENTINE BORROW AREA
FINAL CONFIGURATION PLAN VIEW

References: .

FIG. 7-2

File: ARGBORRO.DWG
view (plan)



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CAYTON BORROW AREA
FINAL CONFIGURATION PLAN VIEW

References: .

FIG. 7-3

File: CAYTON.DWG view (plan)

Figure 2.
Soil sampling locations plotted by lead concentration (mg/kg) over a 1980 aerial photograph